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Lawrence, he found that the barometer as frequently rises as falls under the prevalence of a strong wind; and that the winds often blow with greater force with a rising than with a falling barometer. He gives a circumstantial account of the progress and course of various gales which fell under his observation during that period, and from which he infers the existence of a steady connexion between the prevailing winds of this region and the movements of the barometer, and enters into an inquiry into the mode in which that instrument is affected by them. The extensive valley of the St. Lawrence is bounded at its lower part, for a distance of nearly 500 miles, by ranges of hills, rising on each side to a considerable elevation. Within this space, the ordinary winds follow the course of the river; and in almost every instance when they approach from windward, the barometer rises with them; and when, on the other hand, the wind approaches from leeward, the barometer not only falls before the arrival of the wind, but continues to fall until it has subsided.

An appendix is subjoined containing extracts from the tabular register of the barometer and winds at various points in the valley of the River St. Lawrence, during the years 1834 and 1835, accompanied by remarks on different points deserving notice in particular cases.

“On the Elliptic Polarization of Light by reflexion from Metallic Surfaces.” By the Rev. Baden Powell, M.A., F.R.S., Savilian Professor of Geometry in the University of Oxford.

In a former paper, published in the *Philosophical Transactions* for 1843, the author gave an account of the observations he had made on the phenomena of elliptic polarization by reflexion from certain metallic surfaces, but with reference only to one class of comparative results. He has since pursued the inquiry into other relations besides those at first contemplated, and the present paper is devoted to the details of these new observations, obtained by varying the inclination of the incident rays, and the position of the plane of analysis, and by employing different metals as the reflecting surfaces. By the application of the undulatory theory of light to the circumstances of the experiments and the resulting phenomena, the law of metallic retardation is made the subject of analytic investigation. A polariscope of peculiar construction, of which a description is given at the conclusion of the paper, was employed in the experiments: and tables are subjoined of the numerical results of the observations.

“On the Gas Voltaic Battery. Voltaic Action of Phosphorus, Sulphur, and Hydrocarbons.” By William Robert Grove, Esq., M.A., F.R.S., V.P.R.I., Professor of Experimental Philosophy at the London Institution.

The author, referring to a paper of his published in the *Philosophical Transactions* for 1843, states, that in repeating and verifying some of the experiments therein contained, he was led to those which

form the subject of the present memoir. With the form of gas battery last described in that paper, by which the interfering action of the external air is excluded, he finds that deutoxide of nitrogen associated with oxygen gives a continuous voltaic current; and that the volumes respectively absorbed by the electrolyte are as four to one, indicating the formation of hyponitrous acid.

Passing to the more immediate object of the present paper, he states that having observed nitrogen procured by the combustion of phosphorus to give rise, in the gas battery, to a temporary voltaic current, he was led to believe that phosphorus, although an insoluble non-conductor, might, by means of the gas battery, be made the excitant of a continuous voltaic current, analogous to the zinc element of an ordinary voltaic combination. This expectation was verified by experiments, a series of which is given; phosphorus being suspended in various gases and voltaically associated with oxygen. The experiments were continued during several months, and the results indicated the same consumption of phosphorus with reference to the oxygen, as would occur by the formation of phosphorous acid; the phosphorus being thus burned by oxygen at a distance. Phosphorus and iodine, both non-conducting solids, being each suspended in nitrogen in the associated tubes of a gas battery, give a continuous voltaic current, and are consumed in equivalent ratios. Sulphur, suspended in nitrogen and associated with oxygen, gives a voltaic current when fused. Other volatile electro-positive bodies, such as camphor, essential oils, æther and alcohol, when placed in nitrogen and associated with oxygen, gave a continuous voltaic current.

The author observes that the gas battery, which in his former experiments introduced gases, by the present experiments renders solid and liquid insoluble non-conductors the exciting constituents of voltaic combinations, and enables us to ascertain their electro-chemical relations: it also introduces the galvanometer as a test of vaporization.

A new form of gas battery is described, in which an indefinite number of cells are charged by the hydrogen evolved from a single piece of zinc; the oxygen of the atmosphere supplying the electro-negative element. The charge of the battery is self-sustained, in a manner somewhat similar to the Doebereiner light apparatus.

“The Blood-Corpuscle considered in its different phases of development in the Animal Series.” By Thomas Wharton Jones, Esq., F.R.S., Lecturer on Anatomy, Physiology and Pathology, at the Charing Cross Hospital.

This paper is divided into three parts: the first relating to the blood-corpuscles of the Vertebrata; the second to those of the Invertebrata; and the last to a comparison between the two. He first describes the microscopic appearances of these corpuscles in different classes of vertebrate animals, beginning with the skate and the frog, and proceeding to birds and mammifera; first in their early embryonic state, and next in the subsequent periods of their growth. He finds in oviparous vertebrata generally, four principal forms of